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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,336	10/08/2003	Yong-Joon Park	51876P388	9814

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EXAMINER

ECHMEYER, ALIX ELIZABETH

ART UNIT PAPER NUMBER

1745

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/682,336

Applicant(s)

PARK ET AL.

Examiner

Alix Elizabeth Echelmeyer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10-8-03, 1-18-05, 12-05-05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the Response to Requirement for Election/Restriction filed September 1, 2006. Applicants elected Group I, drawn to claims 1-7, without traverse. Claims 8-11 are withdrawn from consideration. Claims 1-7 are pending and are rejected for the reasons given below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thackeray et al. (US Pre-Grant Publication 2002/0114995) in view of Armand et al. (US Patent 6,085,015) and Hasegawa et al. (US Patent 5,370,948).

Thackeray et al. teach a lithium metal oxide electrode for a lithium battery (abstract). Thackeray et al. teach a composition $\text{Li}(\text{Mn}_{0.6}\text{Ni}_{0.13}\text{Li}_{0.27})\text{O}_2$, which meets the requirements of the formula in claim 1 of the instant invention, that is prepared by reacting the Li, Mn and Ni ions in solution, palletizing the result, heating first to 480°C then to 950°C, then grinding the resultant ([0040]).

Thackeray et al. fail to teach the preparation of the aqueous solution by resolving lithium salt, manganese salt and nickel salt, and the steps of gel forming and burning.

Armand et al. teach lithium electrode materials and their preparation. Armand et al. teach the use of metallic salts, specifically lithium acetate dehydrate and manganese acetate tetrahydrate, in solutions to be formed into the electrode material (column 4 lines 18-21). According to Armand et al., the use of metallic salts is desirable since the anions easily decompose at moderate temperatures to form oxides (column 3 lines 39-41).

Armand et al. further teach that the sol-gel technique for forming the lithium materials are known to those skilled in the art (column 3 lines 33-35). Armand et al. teach that the sol-gel technique, which involves forming a gel and then heating it to form an oxide, is desirable because it allows for the incorporation of all the elements into a homogeneous powder with a controllable grain size and can be carried out at a relatively low temperature (column 3 lines 45-48).

It would be desirable to use the salts and techniques taught by Armand et al. since the salts decompose easily to form the desired oxide and the sol-gel technique allows for the incorporation of all the elements into a homogeneous powder with a controllable grain size and can be carried out at a relatively low temperature.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the salts and techniques taught by Armand et al. since the salts decompose easily to form the desired oxide and the sol-gel technique

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allows for the incorporation of all the elements into a homogeneous powder with a controllable grain size and can be carried out at a relatively low temperature.

Hasegawa et al. teach a process for the production of a lithium nickel manganese oxide for the electrode of a lithium cell (abstract). The process includes the dissolution of salts, and Hasegawa et al. specifically teach nickel(II) nitrate hexahydrate to provide the nickel ions (column 3 lines 17-24). Hasegawa et al. also teach heat treating steps at temperatures close in range to those taught by Thackeray et al., with an additional grinding step between the first and second heat treating steps (abstract).

It would be desirable to use the nickel salt taught by Hasegawa et al. in the process of Thackeray et al. in view of Armand et al. since, as taught by Armand et al., metallic the salts decompose easily to form the desired oxide.

It would also be advantageous to use the additional grinding step between the two heat treating steps as taught by Hasegawa et al. since it would ensure good mixing and heating of the intermediate product.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the nickel salt as taught by Hasegawa et al. in the process of Thackeray et al. in view of Armand et al. since metallic salts decompose easily to form the desired oxide. Also, it would have been obvious to one having ordinary skill in the art at the time of the invention to add a grinding step between the heat treatments in order to ensure good mixing and heating of the intermediate product.


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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


SUSY TSANG-FOSTER
PRIMARY EXAMINER

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

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